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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Adrian P. Stephens

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EXAMINER

JAIN, RAJ K

ART UNIT

PAPER NUMBER

2416

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/749,175	Applicant(s) STEPHENS ET AL.	
	Examiner RAJ JAIN	Art Unit 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-21,23-32,34-43,47 and 48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-11,13,14,16-27 and 29-43 is/are rejected.
- 7) ☒ Claim(s) 12,15 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>23 April 2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION
Response to Arguments

Applicant's arguments with respect to claims 1, 3-21, 23-32, 34-43, 47 and 48 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

Claims 32-38 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 32 recites "A computer readable storage medium having instructions.....", the specification fails to disclose an "A computer readable storage medium having instructions.....". Suggest deleting the claims.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim(s) 1, 3-6, 17-25, 32-34 and 39-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US 2005/0111599 A1) in view of Lim et al US 20030081575 A1).

Regarding claims 1, 20, 32 and 39, Walton discloses a method and system for use in a SDMA wireless network (abstract, fig. 1; Para 5, 21), comprising:

identifying a plurality of orthogonal sets of user devices (Fig. 1; subscribers 120 receive orthogonal SDMA signaling from access point 110; Para 5, 7, The loading at the cells affects the overall performance (e.g., throughput) of the system. At low loads, the

available system resources may be divided into sets of "orthogonal" channels, which may then be assigned to the cells, one channel set per cell in a reuse cluster. Because the channels in each set are orthogonal to the channels in other sets, interference on these orthogonal channels is low, and high C/I values may be achieved.),

wherein each orthogonal set in said plurality of orthogonal sets includes multiple user devices that can be transmitted to concurrently by an access point (Fig. 1 shows multiple users 120 with access point 110 transmitting/receiving, paras 5 & 21) using different antenna beams (Fig. 1, the AP transmits via different antenna beams paras 5, 7-9, 22);

selecting an orthogonal set from the plurality of orthogonal sets for use in transmitting data to the corresponding user devices based on a predetermined selection criterion (Paras 97 and 117 selection criterion can be based on SNR or quality of service or some other factors as defined by a user).

initiating after selecting an SDMA exchange for the selected orthogonal set (Fig. 1, paras 175-178, data exchange between terminals).

Walton fails to disclose selecting a set based on an amount of data that is buffered for delivery to user devices.

Lim discloses selecting a set based on an amount of data that is buffered for delivery to user devices (paras 13-15, 33, 35, 36; claim 3).

Scheduling data transmission based on buffer capacity allows for optimum bandwidth efficiency optimum usage of buffers without having buffer overflow and therefore possible data loss.

Thus it would have been obvious at the time the invention was made to incorporate the teachings of Lim within Walton so as to improve overall network efficiency.

Regarding claim(s) 3 and 23, Walton discloses determining a maximum duration for the SDMA exchange (para 8, scheduling interval is same as duration of time). Lim discloses evaluating orthogonal sets in said plurality of orthogonal sets to determine an amount of data that is buffered for said orthogonal sets ((paras 13-15, 33, 35, 36; claim

3); and selecting an orthogonal set that has a largest amount of buffered data that can be delivered within said maximum duration of said SDMA exchange (Para 33).

Scheduling data transmission based on buffer capacity allows for optimum bandwidth efficiency optimum usage of buffers without having buffer overflow and therefore possible data loss. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Lim within Walton so as to improve overall network efficiency.

Regarding claims 4, Walton discloses Qos criteria (Para 117).

Regarding claims 5, Walton discloses selecting an orthogonal set includes using latency related information as part of said predetermined selection criterion (delay diversity is used to accommodate multipath, Para 130).

Regarding claims 6, 25, 34, 42, Walton discloses simultaneously transmitting data to user devices in said selected orthogonal set, using corresponding antenna beams, so that a terminal end of the data transmitted to each user device occurs at substantially the same time (Fig. 1, the AP transmits via different antenna beams paras 5, 7-9, 22 transmitting at substantially the same time to the selected set of subscribers).

Regarding claims 21, 40, Walton discloses an antenna controller (Figs. 1 & 8, an antenna controller 430 to manage the generation of antenna beams to be transmitted users 120, Para 21.).

Regarding claim(s) 17, Walton discloses a generic request message or packet transmission (Para 173-174), Examiner understands that while this a generic packet request sequencing, however, one skilled in the art will appreciate that specialized packet messaging can easily be achieved such as sending and/or receiving a training request packet with no deviation in the scope of the claim.

Regarding claim(s) 18 and 19, Walton discloses transmission with one or more antenna beams to encompass the entire coverage area (Fig. 1, AP 110 transmitting thru entire coverage area).

Regarding claims 24 and 41, Walton discloses controller initiates said SDMA exchange by causing said multi-user wireless transceiver to transmit data to each of the user devices in said selected orthogonal set using a separate antenna beam for each

user device (Figs. 1 & 8, the AP transmits via different antenna beams paras 5, 7-9, 22, also the AP has controller 430 for appropriate control and management of the antenna beam).

Claims 7-11, 13, 14, 16, 26, 27, 29-31, 35-38 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walton et al (US 2005/0111599 A1) in view of Lim et al US 20030081575 A1) further in view of Kasami et al (US 20020181492 A1).

Regarding claim(s) 7, 26 and 27, Walton and Lim fail to explicitly disclose an ACK request between one or more SDMA antenna beams and respective users and/or user groups. Kasami discloses an ACK request between one or more SDMA antenna beams and respective users and/or user groups (see Figs. 2, 3, paras 6, 65-69, 106-109). Each subscriber within a group transmits an ACK back to the access point and therefore acknowledging proper receipt of data. The use of ACK packets allows for retransmission of data packets from the Access point to subscribers only for lost packets and not an entire data stream and thus improving network performance by reducing the number of data packets that have to be retransmitted. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Kasami within Walton so as to improve network performance by reducing the number of data packets that have to be retransmitted due to packet loss.

Regarding claim(s) 8, 35, Walton and Lim fail disclose an ACK request between one or more SDMA antenna beams and respective users and/or user groups. Kasami discloses an ACK request to each user device in said selected orthogonal set after said data has been transmitted (para 126). Reasons for combining same as for claim 7.

Regarding claim(s) 9, 10, and 36, Walton and Lim fail disclose transmitting an ACK request includes transmitting a separate ACK request to each user device in said selected orthogonal set using a corresponding antenna beam. Kasami discloses an ACK request between one or more SDMA antenna beams and respective users and/or user groups (see Figs. 2, 3, paras 6, 9, 65-69, 106-109). Reasons for combining same as for claim 7.

Regarding claim(s) 11, 13, 14, 16, 29, 30, 31, 37, 38 and 43, Walton and Lim fail disclose separate ACK requests each include time information indicative of a time at

which a corresponding user device is to respond to said ACK request. Kasami discloses time indication for each ACK request (see abstract, para 67). Providing a time limit for ACK responses reduces network congestion by reducing number of retransmission of packets. Thus it would have been obvious at the time the invention was made to incorporate the teachings of Kasami within Walton so as to reduce retransmission of packets.

Allowable Subject Matter

Claims 47 and 48 are allowed.

Claims 12, 15, and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAJ JAIN whose telephone number is (571)272-3145. The examiner can normally be reached on M-TH.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 571-272-7872. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raj K. Jain/

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